Amendments to the Specification

Please replace paragraph [0010] with the following:

[0010] Referring now to FIG. 1, a preamble of a continuous-phase modulation (CPM) waveform in accordance with the present invention will be discussed. Preamble 100 is part of a higher data rate waveform such as a waveform compliant with the MIL-STD-188-181B continuous-phase modulation (CPM) waveform. Although FIG. 1 shows a preamble for a particular CPM waveform, the present invention may be adapted to other CPM waveforms or the like without departing from the scope of the invention and without providing substantial change thereto. Preamble 100 is identical to the MIL-STD-188-181B preamble. Preamble 100 begins, after a transmitter power-up section 110, with an alternating bit pattern 112, in one embodiment comprising 192 sync bits (e.g., a repeated pattern 11001100...) to be used for preamble and symbol rate detection. After alternating bit pattern 112 is a 16-bit start-of-message (SOM) 114 bit pattern, in one embodiment AC3B hexadecimal, to provide symbol timing and absolute time marking. Following the SOM 114 is header 116. In the embodiment shown, header 116 comprises a 12-bit header divided into sub blocks 118, repeated 3 times for a total of 36 bits, containing waveform information. The tail of preamble 100 consists of 6 flush bits 120 (010101 or 110101) intended to force 0 phase after preamble 100.

Please replace paragraph [0011] with the following:

[0011] Referring now to FIG. 2, a block diagram of an acquisition system in accordance with the present invention is shown. The acquisition system 200 shown in FIG. 2 is the architecture for a radio-frequency (RF) modem capable of acquiring a CPM waveform. All of the elements of acquisition system 200 may be tangibly embodied as structure that implements the corresponding elements, where the structure includes an appropriate circuit, e.g., filter, amplifier, oscillator, etc., or other hardware structure. In one particular embodiment, the elements of acquisition system 200 are implemented in a digital processing system that is

configured to implement the elements of acquisition system 200. In such an embodiment, digital processing system may include a digital signal processor and associated hardware that is configured via software instructions to implement the elements of acquisition system 200, and may also include hardware logic circuits, such as a logic gates, multiplexers, latches, registers, etc., configured to perform the functions of the elements of acquisition system 200. Acquisition system 200 acquires a CPM waveform by acquiring the preamble of the CPM waveform such as preamble 100 shown in FIG. 1. The preamble acquisition functions implemented by acquisition system 200 are preamble search, symbol rate detection, Doppler estimation, start-of-message (SOM) detection, which provides initial symbol timing, and initial carrier phase estimation. In addition, header detection and decoding are also a part of preamble acquisition implemented by acquisition system 200. A multiplexer 204 receives complex samples of a CPM waveform at input 202, which divides the CPM waveform input into paths ~~207~~ 254 and 210. Path 254 is further divided into paths 226 and 242 by multiplexer 206.

Please replace paragraph [0018] with the following:

[0018] Referring now to FIG. 3, a flow diagram of a method for detecting a preamble of a CPM waveform in accordance with the present invention will be discussed. Although one order of the steps of method 300 is shown, the number or order of the steps of method 300 may be altered, including providing fewer or greater steps, or modifying any one or more of the steps, without providing any substantial change thereto. Method 300 is executed by acquisition system 200 of FIG. 2 and incorporates the functions thereof. Method 300 initiates with the sampling of a CPM waveform at step 310. A fast Fourier transform (FFT) is performed on the waveform at step 312. The power spectrum of the waveform is determined at step 314 from the FFT performed at step 312. An estimate of the signal-to-noise ratio (SNR) is executed at step 316. The SNR calculated at step 316 is compared to a threshold SNR, and a determination is made at step 318 whether the calculated SNR is less than the threshold SNR. In the event the

calculated SNR is less than the threshold SNR, method 300 continues to search of a preamble by continuing execution at step 310. In the event the calculated SNR is not less than the threshold SNR, the power spectra of the waveform are accumulated at step 320. The symbol rate of the waveform is estimated at step 322, and the Doppler is estimated at step 324. A determination is made at step 326 whether further accumulation of power spectra should continue, and in the event such a determination is made, method 300 continues execution at step 320 so that estimations of the symbol rate and the Doppler are updated at steps 322 and 324, respectively. In the event no further accumulation is required, at step 328 the sampling rate is set based upon the symbol rate determined at step 322. ~~The~~ At step 330 the center frequency is tuned based upon the Doppler determined at step 324 to center the waveform spectrum at 0 Hz.

Please replace paragraph [0019] with the following:

[0019] Referring now to FIG. 4, a flow diagram of a method for detecting a start-of-message (SOM) of a CPM waveform in accordance with the present invention. Method 400 is executed by acquisition system 200 of FIG. 2 and incorporates the functions thereof. Although one order of the steps of method 400 is shown, the number or order of the steps of method 400 may be altered, including providing fewer or greater steps, or modifying any one or more of the steps, without providing any substantial change thereto. Method 400 initiates with the sampling of a CPM waveform at step 410. The waveform samples are normalized at step 412. The samples are correlated with known SOM samples at step 414. The magnitude of the correlator output is stored at step 416, and the output of the correlator is adjusted at step 418 to account for and to cancel or reduce the effects of the preamble alternating bit pattern 112, which in one embodiment is a sync pattern. A determination is made at step 420 whether the correlation output is greater than a threshold value, and if it is not, method 400 continues execution at step 410. When the correlation output is greater than a predetermined value, additional samples are correlated at step 422, and a

correlation peak is detected at step 424. The carrier phase at the start of SOM 114 is computed at step 426.